

DETAILED DESCRIPTION OF THE INVENTION

Figure 2 is a block diagram of the hardware of a micro-nanometer precision servo pneumatic X-Y positioning table and the control compensation method in accordance with the present invention. The micro-nanometer precision servo pneumatic X-Y positioning table comprises by two slide air cylinders 21 & 31. The present invention is a pneumatic positioning table, which is able to move toward both X-axis and Y-axis. The slide air cylinder on the X-axis 21 has a positioning sensor optical scale 23 which resolution is micro-nanometer class (e.g. 1 μ m, 1 nm, 20 nm resolution) to measure the displacement of the positioning table on the X-axis 22. Put the slide air cylinder on the Y-axis 31 on the positioning table on the X-axis 22. The slide air cylinder on the Y-axis 31 has a positioning sensor optical scale 33, which measure the displacement of the positioning table on the Y-axis 32. Therefore, the X-Y table is established, and then the positioning table on the Y-axis 32 is able to move toward both X-axis and Y-axis. The principle of the system's operation is as following: the industry computer 11 calculates the control signals for X-axis and Y-axis according to the errors and transfers the control signals to analog voltage signals by the digital / analog interface card 13. The analog output signals drive the servo valve 24 on the X-axis and the servo valve 34 on the Y-axis. The two servo valves 24 & 34 control the flow rate and direction of air into the two slide air cylinders 21 & 31 and make the positioning table on the Y-axis 32 move toward the expected position.